Modern Technological Advances and the Challenges in the Kente Weaving Business of Ghana

Article by Philip Spitta Ansah
PhD in Management, Texila American University
E-mail: spitt9@gmail.com

Abstract

The study examined the challenges of introducing modern technology to facilitate the traditional Kente weaving business of Ghana. Amongst its objectives were ascertaining the weaknesses associated with introducing the technology by identifying the threats emanating from infusing modern technology into the industry. The importance of the study lies in the fact that the findings and recommendations will not only go a very long way to enrich the body of knowledge on the subject of Kente weaving business in Ghana, but will also help make the cottage industry more attractive to the youth and uplift the living standards of the Kente weavers. Challenges associated with the initiative had to do with the fact that most of the weavers are old and illiterates so a lot of work has to be done in coaching them to come on board with the new technology. It is unlikely that the existing weavers would be able to fund the equipments needed for a smooth integration of technology into the weaving of Kente.

Keywords: Technology management, Innovation, Kente weaving, traditional, Challenges, weaknesses.

Introduction

Technology continues to positively influence the way various businesses are conducted. As a result, better quality products and services are not only offered to delight customers, but also cost of production is greatly reduced to register higher returns on shareholder's investment. In the banking industry for instance, owing to advancement in technology, one could sit in the comfort of his or her home to effect payments through the bank account without physically being present at the bank's premises. He or she could also approach any compatible Automated Teller Machine of even other banks to withdraw cash at any convenient time of the day. In Ghana, the sachet purified drinking water business in its earlier stages was labour intensive consequently staff cost virtually swallowed most of the profit margins. With the introduction of the Koyo dispensing machines, human touch in both the filling and packaging processes, have been hugely reduced thereby improving the profit levels in the industry. It is from this background that the researcher is of the conviction that technology can be introduced into the Kente weaving business to completely turn around prospects in the industry. Globally the Kente clothe has been known to originate and produced in Ghana.

Conceptual definition

According to Sahlman & Haapasalo (2009), technology Management can also be defined as the integrated planning, design, optimization, operation and control of technological products, processes and services, a better definition would be the management of the use of technology for human advantage. Technology management is the management of innovation, whether it be a product, a process or an organization, from its conception to its diffusion, and therefore to its implementation within the company, including the consequences, advantages and disadvantages for all of the variables and actors involved in running the company. Innovation is seen as any change produced by technology in an organization towards the satisfaction of its economic goals, i.e. providing an economic advantage. Technology management is then the management of change, i.e. the management of technology. But it also involves management by or through technology, or in other words, how technology is used to run the company. It is a set of tools that creates value by generating new markets and opportunities and or by reducing production and transactions costs.

Review of literature

In the opinion of Levin & Bernard (2008), technology plays a vital role in business. Over the years, businesses have become dependent on technology so much so that if we were to take away that technology virtually all business operations around the globe would come to a grinding halt. Sahlman & Haapasalo (2009) argue that, almost all businesses are dependent on technology on all levels from research and development, production and all the way to delivery. Small to large scale enterprises depend on computers to help them with their business needs ranging from Point of Sales systems, information management systems capable of handling all kinds of information such as employee profile, client profile, accounting and tracking, automation systems for use in large scale production of commodities, package sorting, assembly lines, all the way to marketing and communications. It doesn't end there, all these commodities also need to be transported by sea, land, and air. Just to transport your commodities by land already requires the use of multiple systems to allow for fast, efficient and safe transportation of commodities. Luggen & Tschirky (2003) point out that without this technology the idea of globalization wouldn't have become a reality. Now all enterprises have the potential to go international through the use of the internet. If your business has a website, that marketing tool will allow your business to reach clients across thousands of miles with just a click of a button. This would not be possible without the internet. Technology allowed businesses to grow and expand in ways never thought possible. The role that technology plays for the business sector cannot be taken for granted. If we were to take away that technology trade and commerce around the world will come to a standstill and the global economy would collapse. It is nearly impossible for one to conduct business without the aid of technology in one form or another.

Almost every aspect of business is heavily influenced by technology. In the view of Metz (1996) technology has become very important that it has become a huge industry itself from computer hardware manufacturing, to software design and development, and robotics. Technology has become a billion-dollar industry for a number of individuals. Without all the technology that we are enjoying now it would be like living in the 60's again. No computers, no cellular phones, no internet. Luggen & Tschirky (2003) also explain further that, although IT has a significant impact on reducing cost, it is also a key cost component in the price of business process outsourcing services. This paper discusses the impact of software on outsourced solutions and helps buyers gain a clear understanding of how their decisions impact the cost of services. It provides a clear picture of the cost impacts from such aspects as the following:

- How customization impacts the price of services and time for implementation
- The impact of technology and sustainability of savings — why technology savings are typically not enough to justify the business case for a multi-year outsourcing agreement
- The impact of not improving retained technology and processes that are adjacent to the outsourced process

It also presents information about surprise or overlooked costs associated with governance and explains the significant impacts and ripple effects of not budgeting for these "hidden" costs. Buyers considering business process outsourcing as a strategic option should carefully consider the complete cost picture before embarking on the journey.

Kente weaving in ghana

The technique of weaving on the loom had been invented in different societies around the world thousands of years ago when human beings started wearing woven cloth garments instead of covering themselves with leaves, barks and animal skins and fur. While there is evidence of weaving of plant fibers in Africa as early as 5000 to 4000 BC, it is thought that the horizontal loom and weaving of cotton was introduced sometime in the first millennium. The Puels (Fulani) were the first to learn the trade from Syrian Semitic people from the northeast. While first working with wool, the Puels became skilled at working the loom and developed the practice of working with the new fiber, cotton--learning the techniques from the Arabs. The oldest known mention of the local production of cotton fabrics in the area is in a book written by the learned geographer, traveler and pious Arab Sunni, El Bekri, dated 1068. The techniques in weaving strips of fabric spread rapidly. Both loom and cotton industries were transmitted to the Tukulors, the Wolofs and then to the different Mande people of the Sudan, soon

reaching the Bambara, the Dogon and others. Hence, the Ewes did not invent weaving (Arthur & Rowe, 2001). When we talk specifically about "Kete/Kente Weaving" on the narrow loom, the equipment and the technique between the Ewes and Asantes are so similar that there is no doubt that they originated from the same source. Some writers also claim that Kete (Kente) was probably introduced from the western Sudan during the 16th century, when heavy, elaborate, labor-intensive versions of this fabric were designed for wealthy "tribal" chiefs and simpler designs became available for the general citizenry (Momaya & Ajitabh, 2005).

Objective of the study

The main objective of the study is to ascertain the weaknesses associated with introducing modern technology in the traditional way of weaving Kente in Ghana. Specific objectives include:
  i. To understand the weaknesses inherent in the process of introducing modern technology in the Kente weaving business of Ghana.
  ii. To examine the threats associates with introducing modern technology in the Kente weaving business of Ghana.

Research problem

Globally technology has contributed in no small measure towards shoring up business prospects. Various industries ranging from service, extractive, manufacturing, aviation, shipping, both print and electronic media, etc have all had the fair share in expanding their profit curves owing to the introduction of modern technology. Unfortunately, in Ghana, despite the availability of modern technology certain trades continue to hinge on the outmoded pre-colonial resource wasting methods of producing goods. Kente clothe, which is one of Ghana's cultural identities is traditionally produced by the people of Bonwire in the Ashanti region as well as most citizens of Agotime Kpetoe in the Volta Region. As a result of sticking to their old methods of production, it takes a little over one solid week to weave of 10-metre Kente cloth valued at US$200 or less. When operation cost is deducted the Kente weaver is virtually left with a pea nut for his one-week labour. If modern technology were introduced in Kente production, the 10-metre Kente could be woven or produced in one hour thereby creating enough room for the Kente weaver to produce more and improve tremendously upon his business prospects.

Thesis Statement/Hypothesis

H^1 The weakness within the introduction of modern technology in Kente weaving in Ghana can easily be resolved for the business to flourish properly.

H^2 The weakness associated with introducing modern technology in Kente weaving in Ghana will be difficult to surmount and for that matter the introduction will be a failure due to illiteracy.

Literature review

This chapter examines the concept of technology, theories underlying technology and its transfer as well as taking a close look at the challenges confronting the introduction of technology into the Kente business in Ghana in addition to role of technology in the Textile industry have all been discussed.

Concept of technology and technology management

Technology Management (TM) has become an established academic discipline for two decades ago and located within management field instead of economics or public policy and is focusing on the firm in which the analysis is at firm-level instead of industry level. However, TM is also studied at national-level. TM is multi-functional and multidisciplinary field and very diverse. Moreover, Cetindamar, Phaal and Probert (2006) have proposed TM activities from dynamic capability (DC) perspectives.

TM is to achieve competitive advantage in which have defining competitive advantage as 'the condition that enables a firm to operate more efficiently and/or effectively than the companies it competes with', in which the competitive advantage of technology and innovation-focused firms is related to the technological complexity and skills and knowledge of the firms at managing the technology (Affeldt & Silva 2013). When firms pursue for new product or new process developments, the capabilities use to develop the products/processes are basically developed through and around the

technologies. As the capabilities are transferred through technologies to the new products/processes, it is basically the technological capabilities that are developed behind them. By referring to the definition of resource by Keller, (2002), it is obvious that technology is part of resources and as argued by Lai (2007), 'technology is the knowledge, products, processes, tools, and systems used in the creation of goods or in the provision of services.

The importance of technological resources to the firm's objectives further explained by Levin & Bernard (2008) in which the establishing and maintaining the linkages between technological resources and company objectives is of vital importance and represents a continuing challenge for many firms. The dynamic nature of technology has contributed to the existence of various definitions and concepts of technology by the previous studies which are related to technology transfer. The discussion on the concept of technology is crucial in getting a clear understanding of the nature of technology and examining what the technology consists of. Past studies have shown that defining the concept of technology is not easy (Agboola & Salawu 2010); therefore, technology has been defined from different perspectives. Existing studies on technology have attracted researchers from cross-section of disciplines including organizational management, political science, economics, sociology, anthropology, marketing and recently management of technology.

According to Chun (2007) technology consists of two primary components: 1) a physical component which comprises of items such as products, tooling, equipments, blueprints, techniques, and processes; and 2) the informational component which consists of know-how in management, marketing, production, quality control, reliability, skilled labor and functional areas. The current studies on the technology transfer have connected technology directly with knowledge and more attention is given to the process of research and development. By scrutinizing the technology definition, there are two basic components that can be identified: 1) 'knowledge' or technique; and 2) 'doing things'. Technology is always connected with obtaining certain result, resolving certain problems, completing certain tasks using particular skills, employing knowledge and exploiting assets (Chanaron, Jolly, & Soderquist (2002). The concept of technology does not only relate to the technology that embodies in the product but it is also associated with the knowledge or information of it use, application and the process in developing the product.

In defining the term technology, all the three elements must be understood as being inter-connected to each other and a change in one element will affect the other two elements. The latest definition given by Drejer (1997) has broadened the concept of technology where technology is defined as 'the information necessary to achieve a certain production outcome from a particular means of combining or processing selected inputs which include production processes, intra-firm organizational structures, management techniques, and means of finance, marketing methods or any of its combination'. Other scholars such as Goodhue & Thompson (1995) suggest that technology as a cultural system concerned with the relationships between humans and their environment. From the systems perspective, Das (1987) defines technology as encompassing: 1) the basic knowledge sub-system; 2) the technical support system (software); and 3) the capital-embodied technology (hardware). This perspective views that technology recognizes the need to identify the different elements of a particular country's technology that are complementary and mutually reinforcing.

Levin & Bernard (2008) considers technology transfer as the application of scientific principles to solve practical problems. From the social science perspective Schilling (2008) defines technology transfer as a socio-technical process implying the transfer of cultural skills accompanying the movement of machinery, equipment and tools. The technology transfer concept is not only concern about the transfer of technological knowledge or information but also the technology recipient's capability to learn and absorb technology into the production function. Das (1987) argues that technology transfer can be of two types: 1) production of new product (product or embodied technology transfer); and 2) more efficient production of existing products (process or disembodied technology transfer).

Theories on technology and its management

According to Chun, (2007) new technologies come up after series on innovations have occurred which translate into pure research and eventually developing new technologies. Innovation can therefore be said to bet the starting point of establishing new technology. Before one can examine how

a particular innovation disperses and distributes within a population, one needs to operationalize what is meant by the term innovation. At the broadest sense, an innovation can be any new idea to a population. Rogers (2003) defined an innovation as "an idea, practice or object that is perceived as new by an individual or other unit of adoption". It does not matter if the idea, practice, or object is objectively new; rather, it is the perception of novelty. In addition, innovation also does not necessarily mean better or that the new idea is more beneficial to an individual. Whereas innovation can refer to something abstract, like an idea, it can also be concrete, like a new piece of technology. This article focuses specifically on computer-based technologies as a particular type of innovation of interest (Lai, 2007).

Technology adoption models and theories

Low, Chen, & Wu, (2011) noted that the rate at which payment systems develop depends largely on a struggle between rapid technological change and natural barriers to new product or service acceptance. A number of theories have proposed to explain consumers' acceptance of new technologies and their intention to use. These included, but were not restricted to, the Theory of Diffusion of Innovations (DIT) that started in 1960, the Theory of Task-technology fit (TTF), the Theory of Reasonable Action (TRA), Theory of Planned Behavior (TPB), Decomposed Theory of Planned Behaviour, the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), (Venkatesh and Bala 2008).

Rogers (1995) proposed that the theory of 'diffusion of innovation' was to establish the foundation for conducting research on innovation acceptance and adoption. Rogers synthesized research from over 508 diffusion studies and came out with the 'diffusion of innovation' theory for the adoption of innovations among individuals and organization. The theory explicates "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Luo et al, 2006). Basically, it's the process of the members of a social system communicated an innovation through certain channels over time known as diffusion. The Rogers' (2003) diffusion of innovation theory explained that the innovation and adoption happened after going through several stages including understanding, persuasion, decision, implementation, and confirmation that led to the development of Rogers (2003) S-shaped adoption curve of innovators, early adopters, early majority, late majority and laggards as shown in figure 1:
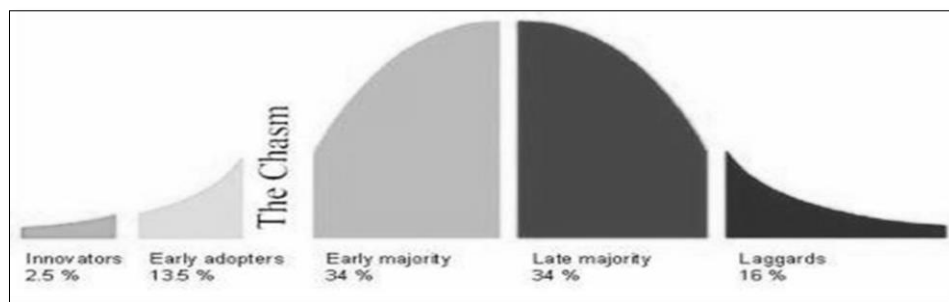

Figure 1. Adoption curve of innovation

Technology readiness (TR) refers to people's propensity to embrace and use of new technologies for accomplishing goals in home life and at work. Based on individual's technology readiness score and the technology readiness, Burgelman, Christensen, & Wheelwright (2004) further classified technology consumers into five technology readiness segments of explorers, pioneers, skeptics, paranoids, and laggards. This is similar to Rogers (2003) S-shaped adoption curve of innovators, early adopters, early majority, late majority and laggards. The Diffusion of innovation or Technology readiness is vital for organization implementation success because it is market focus.

According to Dodgson et al (2008), Task-technology Fit (TTF) emphasizes individual impact. Individual impact refers to improved efficiency, effectiveness, and/or higher quality. Drejer (1997) assumed that the good fit between task and technology is to increase the likelihood of utilization and also to increase the performance impact since the technology meets the task needs and wants of users

more closely. The task-technology fit is good for measuring the technology applications already release in the marketplace like in the google play store or apple store app (iTunes) etc.

Challenges of introducing technology in business

To remain competitive in a global economy, Buchanan (2012) explains that businesses need to adapt to an ever-changing environment to meet their customer's needs. Staying competitive means continuing to evolve as an organization and making changes to both process and technology to gain a competitive edge over their competition. Organizations must become adept in bringing in new technology and managing the challenges that go along with implementing the change. Changes of this nature can provide significant benefits to an organization but can also present many challenges that need to be managed to yield a positive outcome. Problems arise when organizations attempt to bring in a new technology without proper management and training for their employees (Barnes 2005).

Constant technological change simultaneously creates threats to established business models, while also offering opportunities for novel service offerings. Leading firms often seek to shape the evolution of technological applications to their own advantage (Lai, 2007). With the advanced and dynamic growth of technologies, how fast the consumers are accepting these technologies depends on a number of factors such as availability of technology, convenience, consumers' need, security etc. There have been a number of researchers addressing the consumers' adoption of new technologies. Since technology is such a vital force, the field of technology management has emerged to address the particular ways in which companies should approach the use of technology in business strategies and operations. Technology is inherently difficult to manage because it is constantly changing, often in ways that cannot be predicted (Chun, 2007). Managing employees' acceptance of technology change can be a challenge for any organization (Lynch et al 2011). To successfully implement a technology change, several areas need to be affectively addressed. Challenges with internal conflict, or resistance by staff to the change must be managed. Employee training, communication and a multi-generational work force should all be considered and planned for when selecting a new technology. These items can be addressed with a well-defined implementation plan, an effective training plan and open communication between employees and management.

Resistance to change

Change is an unavoidable phenomenon within the business world. It arises from the dynamics of the environment organizations operate in and is required for an organization that wants to flourish. To remain competitive, Liao (2005) indicates that, it is essential for organizations to be able to upgrade their tool set on a regular basis and have these changes accepted by staff. There are many items to consider when bringing new technology into an organization. It is important to note that altering staff behavior is a long-term objective and change cannot be forced on employees overnight, it is a key to provide them with the context for the change so they are able to understand the need for it (Pilkington & Teichart, 2006).

Gaining acceptance at the staff level can be a challenge as getting buy-in by the employees' who are going to use the new technology can be difficult to manage. Introducing changes within an organization can cause disruptions in patterns or behaviors that can cause loss of continuity, replace customary social structures and familiar relationships (Agboola & Salawu, 2010). Bringing on new technology can be intimidating for employees' who are content in doing things as they have always done them. Adopting new technology can mean changes to job responsibilities, added work load, additional training and personnel. Technology changes of this nature can also impact the politics of an organization. Those who possess certain skills and abilities may see change as a threat to their positions and undermining their job competence. Changes of this nature also have the potential to impact relationships and change behavior patterns of employees. Resistance to change can also come from an unexpected source, management (Anderson, 1997). In some situations, managers who should be champions of change, may see it as a threat to their position within an organization. When changes are directed by senior level management, middle managers can find themselves in a similar position as their employees and begin to resist the changes that are being pushed down to them. Managers in this position are uniquely

positioned to either have a negative or positive effect on the change being made by encouraging employees to either resist or accept the change being implemented (Brady et al 1997).

Chun (2007 further argue that, Technology changes can also impact the nature and culture of an organization. Changes have the possibility of impacting an employee's job responsibilities, which can create feelings of uncertainty. The uncertainty of what new technology means for employees' can trigger more resistance to their acceptance of it. Resistance can also come in the form of attachment to old processes and legacy tools that employees are comfortable with. Employees can become accustomed to a situation that are not the most beneficial and will strongly resist any suggestions to change it. Technology change is more than just brining in a new tool or piece of software, it is also changing the behavior of employees' that can be content with a given way of doing things and resistant to changing what they are used to (Benamati et al, 1998).

Human discomfort with change is really based on the fear of loss. The fear of the unknown sometimes is worse than the actual change itself and employees can let these fears cloud their judgment about the benefits that a change may bring for them and an organization. Causes of these fears can come from feelings of uncertainty, lack of tolerance, differences in opinion and threatened self-importance. According to Carr (1999) "resistance to change is mainly an effort to maintain the status quo and resistance is a behavior put up to protect an individual from the perceived effects of a real or imagined threat". To help manage change effectively and reduce the resistance of employees to change, organizations should have a mechanism in place to introduce and control the changes so they are able to avoid production or morale issues.

Research done by Benamati, et al (1998) showed that the fear of new technology kept employees from using it to the fullest extent. Instead of embracing the new technology only the minimum functionality required to use it was learned to apply it to their work. Additional research also suggests that promotion-focused employees would maximize their ability to master the new technology on their own, because it would provide them with a sense of achievement and accomplishment where as a prevention-focused employee would be reluctant to separate from their normal routine to learn new technology own and procrastinate in adopting it for fear of not having enough time to get their assigned work completed (Keller, 2002).

Cetindamar et al (2006) described resistance to change as "barriers arising from organizational politics, inappropriate use of power, challenges to cultural norms and institutional practices, lack of understanding, inappropriate timing, inadequate resources, incorrect information or employee suspicion of honorable management intentions". In most cases resistance to change is a negative force and does not always surface in standard ways and can appear in various forms such as being overt, implicit, and immediate or deferred in nature. Resistance to change is part of human culture which can be rather inflexible at times. This inflexibility influences people's behavior and efforts to make changes creates natural resistance in people (Boateng, 2011).

Research methods

This segment gives a summary of the research methodology used in the research. In order to help address the issues raised under the research questions section in chapter one, explanatory research design was chosen. The explanatory research presents data relevant for cause-effect relationships. It is therefore the best approach to adopt in explaining how events occur (Booth et al (2008).

Population of the study

The target group is the Kente weavers in Bonwire as well as Agotime Kpetoe in addition to picking up information from stakeholder pertinent public institutions. Yin (2009) describes a research population as a group that the researcher wants to generalize from which a sample is drawn and interviewed for picking up needed information to meet the objectives of the study. This was supported by Creswell (2013) when he defined a sample as a subset of the population in determination of sample. Random selection captures and inspects data using descriptive statistics question and comprises a selection of members from that particular population. The definition of the sample is of vital importance as the results of an investigation are not trustworthy more than the quality of the population or representativeness of the sample.

Source of data

Both primary and secondary data was employed in conducting the study. Whereas primary data emanated from responses collated from interview guide and questionnaire administered to the respondents, secondary data were obtained from books, pertinent academic journals and other unpublished materials. In obtaining the primary data, purposive sampling technique was used to directly pick up officials who have the requisite knowledge in Kente weaving and distribution to assist the study in meeting its objectives.

Data analysis and discussion

This chapter presents the analysis of data gathered from the field together with their interpretation. It begins with the demographic of both groups of respondents prior to displaying the finding in respect of the specific objectives of the study aimed at introducing modern technology in the Kente weaving business of Ghana.

Educational background of kente weaver

Findings on the academic background of respondents have been shown in figure 4.1
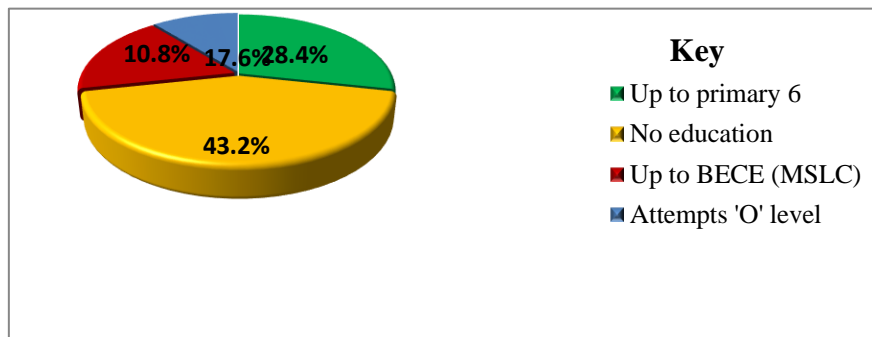

Figure 4.1. Distribution of academic background of respondents

Sources: Field Data (2018)

Figure 4.1 shows that, 32 (i.e. 43.2%) out of the 74 kente weaving respondents had no formal education. Twenty-one (i.e. 28.4%) respondents schooled up to the primary 6 level while 13 (i.e. 17.6%) respondents ended their academic work at the basic school level i.e. either Middle School Leaving Certificate (MSLC) or he recently introduced basic education certificate examination. Eight (i.e. 10.8%) respondent attempted the general certificate of education (GCE) ordinary level. It is obvious from the above that the kente weaver wild very low academic qualification.

Number of years in kente weaving

Findings on respondents' number of years in kente weaving has been shown on figure 4.2
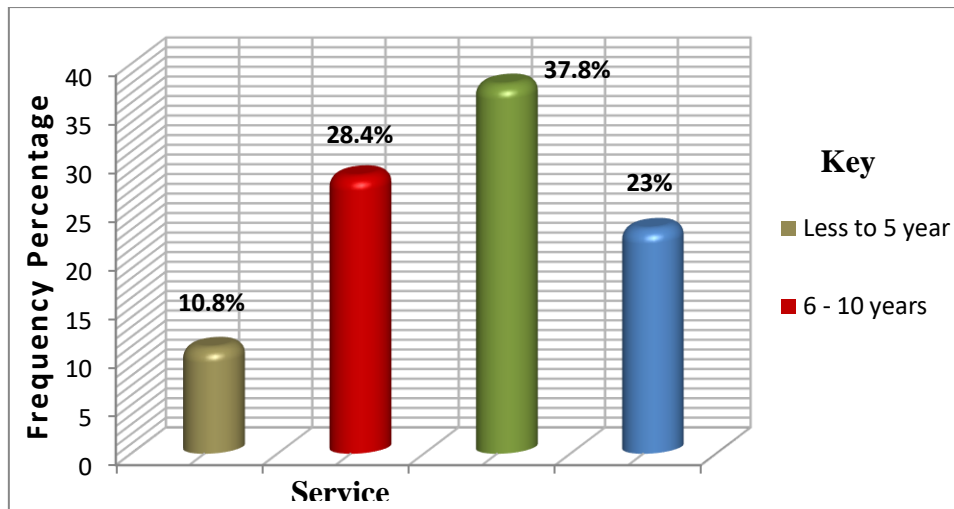
Figure 4.2. Distribution of service duration in kente weaving

Source: Field Data (2018)

It can be gathered in Figure 2 that 28 (i.e. 37.8%) respondents out of 74 have been working in Kente weaving business in periods between 11 and 15 years. Twenty-one (i.e. 28.4%) have been in the employ of the Kente business for periods between 6 and 10 years. Seventeen (i.e. 23%) respondents have also been on the Kente weaving for over 15 years while 8 (i.e. 10.8%) respondents have been with the business for not more than 5 years.

Analysis of Issues relating to Research Objective Two of Understanding the Weaknesses Associated with introducing Modern Technology in Kente weaving business of Ghana.

This segment examines the weaknesses inherent in the process of introducing modern technology in the kente weaving business of Ghana. First it looks at the views of the weaver respondents prior to discussing the responses from the stakeholder institutions.

Table 4.10. Frequency table from Kente Weavers on Weakness Associated with introducing Technology into Kente Weaving Business

Response Type	Frequency (Out of 74)	Percentage %
We are not educated how can we understand the use of the new technology in the shortest possible time to continue or trade.	55	74.3
Non-traditional weavers will invade the business and throw us out in the process.	59	79.7
During the learning process where do we get money to fend for ourselves and families.	64	86.5
The machines or new weaving equipments will be too expensive to meet our pockets.	69	93.2
We don't have strong trade association to eight for over business rights.	48	64.9

Source: Field Data (2018)

Table 4.10, contains weaknesses within the process of introducing technology into the Kente business as seen by the weavers. According to 69 (i.e. 93.2%) Kente weaving respondents, one main weakness in the introduction lies with the fact that the machines or the new weaving equipments will be too expensive for the traditional weaver to purchase. Sixty-four (i.e. 86.5%) respondents pointed out that it will be difficult for them to come by that amount of money needed to procure the new equipments or machines for their businesses. In the opinion of 59 (i.e. 79.7%) respondents another weakness is that non-traditional weavers will invade the business and as it were, throw them out of business.

It can also be gathered from table 4.8, that 55 (i.e. 74.3%) respondents noted that they are not educated people and for this fact it will be difficult for them to easily understand how the new technology works. According to 48 (i.e. 64.9%) respondents the Kente weaver are virtually on their own without any strong trade association to properly position their business. Forty-three (i.e. 58.1%) respondents observed that the advent of the new waving technology is likely to introduce a glut into the market leading to price war and fall in revenue and by extension profits.

The findings that the new equipments needed to conduct the Kente waving might be too expensive for the traditional weavers to purchases initially have been corroborated by Stam & Stanton (2010) who noted in a similar study that more often than not, new equipments introduced to facilitate cottage industries are often priced beyond the pocket of the industry participants. In the opinion of Kadolph (2007) funds should be made available to support industry players like the traditional Kente weavers to help them acquire the new equipments to complete the integration exercise. Scott (2000) is also of the view that some national funds could be established to enhance the process of transformation. The findings that other investors could invade the kente weaving market to 'pirate' the industry profits away have also been supported by Frings (2008) who submitted that when an industry is made attracted, together investors locally come on board thereby introducing intense competition in the industry.

The source disagreed that the 'invasion' will 'pirate' profits away, and noted however that such competition will rather result in new designs within the product profile leading to more patronage and therefore better quantum of revenue for all. The absence of a reputable trade association to organize kente weavers was seen by Asare (2012) as a serious setback to the introduction of the new technology. The source explains further that a strong trade association helps in fostering healthy industry bonds amongst members necessary to ensure judicious use of resources by members. Generally, it was noted that these weaknesses in new equipment introduction can all be resolved through proper analysis and appropriated solutions prescribed (Benamati et al, 1998).

Findings from stakeholder officials

Discussed below are research findings from stakeholders on weaknesses associated with introducing modern technology in the Kente weaving business of Ghana.

Table 4.11. Frequency table on weakness in introducing modern technology in kente weaving business

Statements on weakness	N	Mean	Std. Deviation	Variance	Rank
Illiteracy amongst weavers will delay the technology integration process.	84	4.07	.597	.356	1
Entrenched traditions will dissuade the elderly weavers from embracing the modern tradition.	84	3.71	.886	.785	2
Sian Tigers, especially Chinese industrialists, will capitalise on the introduction of technology to over produce Kente leading to a glut in the seemingly restricted business area.	84	3.43	1.122	1.260	3
Banks and other financial institutions may be unlikely to finance individual weavers in acquiring the new equipment to propagate the business.	84	3.29	1.036	1.074	4
Individual weavers might be unwilling to form groups to enhance their chances of winning external financial support.	84				

Source: Field Data (2018)

Table 4.11 - mentions illiteracy and entrenched traditions as the key weaknesses associated with the introduction of technology in the kente weaving business of Ghana. Furthermore, the weavers might have adequate financial resources to purchase the equipments for the weaving process. Another

weakness mention by the officials related to the fact that Banks and other financial institutions may be unlikely to finance individual weavers in acquiring the new equipment to propagate the business. Moreover, the stakeholders were of the conviction that individual weavers might be unwilling to form groups to enhance their chances of winning external financial support.

Generally, weakness can be address if the weavers will allow stakeholders to help them with such difficulties. According to Stam & Stanton (2010) where technology is being introduce to non-educated people, a lot of efforts must be made to ensure that the rudiment of the processes is clearly understood in a language that the learner speaks.

Analysis of Issues relating to the Objective of Examining Threats Associated with introducing Modern Technology in Kente Weaving in Ghana

As it has been done, above the views of the kente weavers will precede those of the small-scale industry stakeholders.

Views of Kente Weavers on threats Associated with introducing Technology in Kente Business

Presented in figure 4.4 are the views of kente weavers on the likely threats concerning introducing technology to support the kente business.
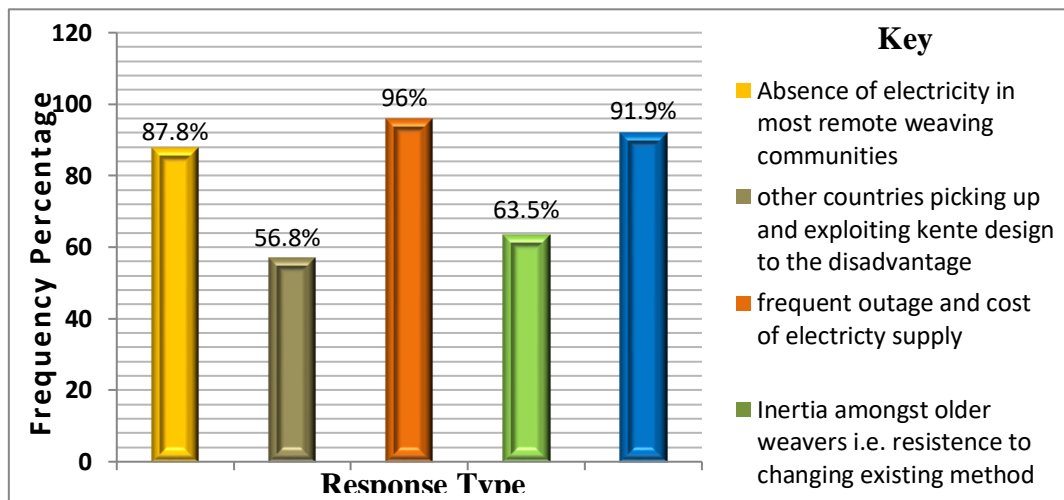
Source: Field Data, 2018

Figure 4.4 indicates that 71 (i.e. 96%) kente weaver respondents are of the view that frequent outage of electricity supply and its increasing cost constitute a huge threat to the envisaged strategy for introducing modern technology in the kente weaving business. According to 68 (i.e. 91.9%) weaver respondents another threat will be the initial funds required by traditional weavers to convert their outdoor weaving business to an indoor enclosed business. Sixty-five (i.e. 87.8%) respondents saw the unavailability of electricity supply in some remote rural communities as a further threat to modernizing the traditional kente weaving business. Forty-seven (i.e. 63.5%) respondents saw inertia amongst older weaver as another potential threat to the new technology integration process in the kente weaving business. In the opinion of 42 (i.e.56.8%) respondents' other countries are likely to pick up the kente design for piracy purposes thereby over producing to create glut in the business.

View from officials of stakeholder institutions

Views from stakeholder institutions have been presented here-under in table 4.13

Table 4.13. Frequency table on threat posed to Kente Business by Technology Introduction

Statements on Threats	N	Mean	Std. Deviation	Variance	Rank
Large production volumes could drive price of commodity down.	84	4.07	.597	.356	1
Foreign investors could disrupt and divert industry profit.	84	3.86	.643	.413	2
Other countries might hijack the Kente business thereby losing its African in Ghanaians accent.	84	3.64	.977	.955	3
The Kente designs could be corrupted and 'diluted' leading to loss of original accent and taste.	84	3.36	1.453	1.112	4
When exposed too much other designs from industrialised economies could crowd out the Kente product in price leading to drop in revenue.	84	3.26	.838	.702	5

Source: Field Data (2018)

Table 4.13 shows that in the opinion of stakeholders the greatest threat to the technology integration process lies in the fact that other investors could invade the industry to produce more thereby creating a price war and as it were drive down prices considerably. This ranked first with mean score of 4.05 out of a maximum of 5 on the likert scale graduation. Coming second with a mean score of 3.86 is the threat of foreign investors joining the industry to compete away profit. There is a threat of sub regional countries also pirating the kente designs and using the new technology, they could over produce to reduce industry profit.

Kente being a global dressing material, there is also the threat of industralised countries using more sophisticated technology to produce the commodity at much cheaper cost thereby being in the position to serve at highly competitive prices with its negative impact on the fortunes of the traditional Ghanaian kente weaver.

Kente Weavers on Weakness Associated with introducing Technology into Kente Weaving Business

The study indicated further that; weaknesses associated with introducing technology in the kente weaving business are that:
- Non-traditional weavers will invade the business and throw us out in the process
- During the learning process where do we get money to fend for ourselves and families
- The machines or new weaving equipments will be too expensive to meet our pockets.
- We don't have strong trade association to eight for over business rights.
- We are not educated how can we understand the use of the new technology in the shortest possible time to continue or trade

Weakness in introducing Modern Technology in Kente Weaving Business

The study disclosed further that, some of the weakness in introducing modern technology in Kente weaving business includes:
- Banks and other financial institutions may be unlikely to finance individual weavers in acquiring the new equipment to propagate the business.
- Individual weavers might be unwilling to form groups to enhance their chances of winning external financial support.
- Illiteracy amongst weavers will delay the technology integration process.
- Entrenched traditions will dissuade the elderly weavers from embracing the modern tradition.

- Asian Tigers, especially Chinese industrialists, will capitalize on the introduction of technology to over produce Kente leading to a glut in the seemingly restricted business area.

Threat posed by the introduction of Modern Technology to shore up Prospects in the Kente Weaving Business

It came out from the study that, threat posed to Kente business by introduction modern technology may include:

- Large production volumes could drive price of commodity down.
- Foreign investors could disrupt and divert industry profit.
- The Kente designs could be corrupted and 'diluted' leading to loss of original accent and taste.
- When exposed too much other designs from industrialized economies could crowd out the Kente product in price leading to drop in revenue.
- Other countries might hijack the Kente business thereby losing its African in Ghanaians accent.
- The absence of electricity supply and frequent interruption in most hinterlands, where Kente weaving goes on, could disrupt the technology integration process.

Summary, conclusion and recommendation

This final chapter summarizes the study, draws useful conclusions and makes appropriate recommendations.

Summary of the study

The overall objective of the study was to ascertain the challenges associated with introducing modern technology into the traditional way of weaving Kente in Ghana. Specific objectives include understanding the weaknesses inherent in the process of introducing modern technology in the Kente weaving business of Ghana, as well as examining the threats associated with it.

Technology plays a vital role in business. Over the years, businesses have become dependent on technology so much so that if we were to take away that technology virtually all business operations around the globe would come to a grinding halt. Staying competitive means continuing to evolve as an organization and making changes to both process and technology to gain a competitive edge over their competition. Changes of this nature can provide significant benefits to an organization but can also present many challenges that need to be managed to yield a positive outcome.

Conclusions

The study explored the possibility of introducing new technology in the traditional kente weaving business in Ghana by analyzing the challenges to be anticipated. The study concludes that the weaknesses associated with the introduction concern the fact that majority of the weavers are illiterates and for that matter handing down technological knowledge will be difficult to undertake. It was further noted that absence of electricity supply in most hinterlands or rural areas will be a big threat to the new technology integration process. Attention is now turned towards testing the hypothesis of the research.

Test of hypothesis

The hypothesis that most of the weaknesses in introducing technology in the kente weaving business can be resolved is accepted and its null hypothesis i.e. H_2 rejected because the weakness like illiteracy of traditional weavers can be overcome through adult education to enable them appreciate the rudiments of the new technology being introduced.

Recommendation

In the light of some weaknesses and threats uncovered in the study, the following recommendations can be made:

Ensuring fair distribution of electric power to rural and deprived communities

The study uncovered the fact that a good number of rural areas do not have electric lights and that this is likely to disrupt the introduction modern technology in the kente weaving business of Ghana. It is therefore recommended that stakeholder institutions especially national board for small scale

industries (NBSSI) liaises with the appropriate department of electricity generating institutions like Volta River Authority (VRA) and Electricity Company of Ghana (ECG) to ensure that the commodity is evenly distributed across the country. Where possible, government could subsidize the cost of electricity to the rural dwellers so as to encourage patronage for various poverty reduction projects.

Financing cost of new technology for weaving kente

The kente weavers complained of the likelihood of their inability to finance the acquisition of the new weaving equipments under the new dispensation. It is hereby recommended that a soft funding arrangement should be put in place to facilitate easy acquisition of the new weaving equipments. A strong trade association should be established to help the financial institution or government agency to monitor placed in the domain of the traditional weaver.

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